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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/898,555	07/02/01	MURPHY	T TI-33069

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EXAMINER

GONZALEZ, J

ART UNIT

PAPER NUMBER

2834

DATE MAILED:

10/24/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/898,555

Applicant(s)

MURPHY, TERENCE JOSEPH

Examiner

Julio C. Gonzalez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Output voltage sensing of charge mode and voltage mode actuator drives having a current mirror amplifier type AB.

Drawings

- X
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "42" has been used to designate both driver circuit and driver amplifier. Correction is required.

- ? fig 6
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: piezo 100 ^{fig 6} Correction is required.

- X
4. The drawings are objected to because amplifier 42 is not in figure 10 as described in the specifications. Correction is required.

- ?
5. The drawings are objected to because in figure 4, the reference 42 is used to point an amplifier 42, which is outside the sensing circuit 42. Correction is required.

- X
6. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the DAC and the ADC disclosed in claims 22 and 23 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 2, 3, 18, 19 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

X In claim 2, what is meant by "voltage mode"? Is the piezo actuator providing voltage to the sensing circuit?

✓ In claim 3, how can the piezo actuator charge itself? What is been charged?

X In claim 18, in the statement "a capacitor is coupled to the first output", first output of what part of the circuit? What device drives a second output to the piezo actuators? The amplifier 42, the sensing circuit? The current mirror?

7 In claim 22, is the drive amplifier from the sensing circuit or the drive amplifier outside the sensing circuit (claim 1)?

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Wilson.

Wilson discloses a piezo actuator with a drive amplifier 3, a piezo actuator 5, a sensing circuit 15 coupled to the drive amplifier.

Moreover, the sensing circuit comprises a resistor divider and a capacitor is coupled to one of the outputs (see figure 2) and an amplifier 15-6 forms a part of the sensing circuit.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 10-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson in view of Fontanella et al.

Wilson discloses a piezo actuator with a drive amplifier 3, a piezo actuator 5, a sensing circuit 15 coupled to the drive amplifier. Moreover, the sensing circuit comprises a resistor divider and a capacitor is coupled to one of the outputs (see figure 2) and an amplifier 15-6 forms a part of the sensing circuit.

However, Wilson does not disclose a current mirror.

On the other hand, Fontanella discloses for the purpose of enabling precise controlled of large hysteresis loop of voltages in piezoelectric actuators, a current mirror type AB coupled to the output of the drive amplifier (see figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design a sensing circuit with an actuator as disclosed by Wilson and to modify the invention by including a current mirror for the purpose of enabling

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precise controlled of large hysteresis loop of voltages in piezoelectric actuators as disclosed by Fontanella et al.

13. Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson in view of Kondou.

Wilson discloses a piezo actuator with a drive amplifier 3, a piezo actuator 5, a sensing circuit 15 coupled to the drive amplifier. Moreover, the sensing circuit comprises a resistor divider and a capacitor is coupled to one of the outputs (see figure 2) and an amplifier 15-6 forms a part of the sensing circuit.

However, Wilson does not disclose a control circuit.

On the other hand, Kondou discloses for the purpose of reducing slope measurements thus reducing the burden upon the control processor, a DC control circuit 101 integrated into a compensation loop and a DAC 104 coupled to the drive circuit and an ADC 111 coupled to the sensing circuit.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design a sensing circuit with an actuator as disclosed by Wilson and to modify the invention by including a control circuit for the purpose of reducing slope measurements thus reducing the burden upon the control processor as disclosed by Kondou.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julio C. Gonzalez whose telephone number is (703) 305-1563. The examiner can normally be reached on M-F (8AM-5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Jcg

October 19, 2001


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